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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/473,137	12/28/1999	MATSUTARO MIYAMOTO	991517	9634

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EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 12/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/473,137

Applicant(s)

MIYAMOTO ET AL.

Examiner

Christopher Verdier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-99 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 88,90-92 and 94-99 is/are allowed.
- 6) ☒ Claim(s) 38,42-46,49,51,57-70,72-76,78-80,83-87,89 and 93 is/are rejected.
- 7) ☒ Claim(s) 39-41,47,48,50,52-56,71,77,81 and 82 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13,17,18.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Continued Prosecution Application

The request filed on September 25, 2002 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/473,137 is acceptable and a CPA has been established. An action on the CPA follows.

Receipt and entry of Applicants' Preliminary Amendment dated September 25, 2002 is acknowledged. Claims 38-99 are pending. Applicants' comments regarding the Japanese Priority Applications 187681/1997 and 29160/1998, concerning the fact that at least a part of the stator moves radially into the clearance when abnormal torque is applied from the rotor to the stator, have been considered and are correct. Therefore, Japanese Patent 11-62,879 and US Patent Application Publication 2001/0016160 are removed as references due to the prior effective filing date of the certified copies of Japanese Priority Applications 187681/1997 and 29160/1998. Applicants' comments regarding Japanese Patent 61-25,994, Okamura, Nishiuchi, and Japanese Patents 62-29,796 and 63-223,394 have been considered but are moot in view of the submission of new claims 38-99 of different scope than the claims that were finally rejected.

Election/Restriction

Applicants' election with traverse in paper number 7 of species 14, drawn to figures 29-30 is acknowledged (see the restriction requirement of August 23, 2001, paper number 6). Because there is no indication that a change in election is desired, prosecution is being continued on the invention elected and claimed, which pertains to species 14, drawn to figures 29-30.

Specification

The disclosure is objected to because of the following informality: Appropriate correction is required.

On page 1, line 2, the patent number for application 09/104,171 should be provided.

Certified Copies of Foreign Priority Documents

Applicant has not filed a certified copy of Japanese applications 187681/1997 and 29160/1998 as required by 35 U.S.C. 119(b).

Claim Objections

Claims 51, 54, 55, 72, 75-76, and 81-84 objected to because of the following informalities: Appropriate correction is required.

In claim 51, line 3, -- a -- should be inserted before "rotating" (first occurrence).

In claim 51, line 3, -- the -- should be inserted before "rotating" (second occurrence).

In claim 54, line 2, "by" should be changed to -- of --.

In claim 55, line 1, -- pumping section -- should be inserted after "vane".

In claim 72, line 3, -- a -- should be inserted before "rotating" (first occurrence).

In claim 72, line 3, -- the -- should be inserted before "rotating" (second occurrence).

In claim 75, line 2, "by" should be changed to -- of --.

In claim 76, line 1, -- pumping section -- should be inserted after "vane".

In claim 81, line 8, -- a -- should be inserted before "rotating".

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In claim 81, line 9, -- the -- should be inserted before "rotating".

In claim 83, line 6, -- a -- should be inserted before "rotating".

In claim 83, line 7, -- the -- should be inserted before "rotating".

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 51, 72, 83-84, 89, and 93 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Newly submitted claim 51, lines 3-4 recite that a sealing portion is provided between a portion (of the stator) which is not rotated with the rotating element by the abnormal torque and is stationary. As seen in the elected embodiment of figures 29-30, and disclosed in the specification, the sealing portion 200 is not provided between a portion (of the stator) which is not rotated with the rotating element by the abnormal torque and is stationary, but rather is provided between a portion of the stator 32 that is rotated with the rotating element by the abnormal torque and is rotating. Claim 72, lines 3-4 contain new matter for the same reason. Claim 83, lines 6-7 contain new matter for the same reason. Claims 89 and 93, which recite an additional cooling device provided at the bottom portion of the stator contain new matter, because there is no support in the original specification for this newly claimed feature.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 44-46, 51, 65-67, 72, 83-84, 89, and 93 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 44, lines 2-3, "a vane pumping section and/or a groove pumping section comprise by said stator and said rotor" is a double recitation of the limitations in claim 38, lines 5-6. In claims 45-46, line 2, "said inner casing" lacks antecedent basis. Claim 51, lines 3-4, which recite that a sealing portion is provided between a portion (of the stator) which is not rotated with the rotating element by the abnormal torque and is stationary, is inaccurate. As seen in the elected embodiment of figures 29-30, and disclosed in the specification, the sealing portion 200 is not provided between a portion (of the stator) which is not rotated with the rotating element by the abnormal torque and is stationary, but rather is provided between a portion of the stator 32 that is rotated with the rotating element by the abnormal torque and is rotating. In claim 51, line 3, "a portion" is indefinite because it is unclear what element this corresponds to. In claim 65, lines 2-3, "a vane pumping section and/or a groove pumping section comprise by said stator and said rotor" is a double recitation of the limitations in claim 59, lines 5-6. In claims 66-67, line 2, "said inner casing" lacks antecedent basis. Claim 72, lines 3-4, which recite that a sealing portion is provided between a portion (of the stator) which is not rotated with the rotating element by the abnormal torque and is stationary, is inaccurate. As seen in the elected embodiment of figures 29-30, and disclosed in the specification, the sealing portion 200 is not provided between a portion (of the stator) which

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is not rotated with the rotating element by the abnormal torque and is stationary, but rather is provided between a portion of the stator 32 that is rotated with the rotating element by the abnormal torque and is rotating. In claim 72, line 3, "a portion" is indefinite because it is unclear what element this corresponds to. Claim 83, lines 6-7, which recite that a sealing portion is provided between a portion (of the stator) which is not rotated with the rotating element by the abnormal torque and is stationary, is inaccurate. As seen in the elected embodiment of figures 29-30, and disclosed in the specification, the sealing portion 200 is not provided between a portion (of the stator) which is not rotated with the rotating element by the abnormal torque and is stationary, but rather is provided between a portion of the stator 32 that is rotated with the rotating element by the abnormal torque and is rotating. In claim 83, line 7, "a portion" is indefinite because it is unclear what element this corresponds to. Claims 89 and 93, which recite that there is an additional cooling device provided at the bottom portion of the stator are inaccurate. There is no disclosure in the embodiment of elected figures 29-30 of there being a cooling device provided at the bottom portion of the stator in addition to the cooling device 206.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

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subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 38, 42, 43, 51 (as far as claim 51 is definite), 57, 59, 63-64, 72 (as far as claim 72 is definite) 78, and 83 (as far as claim 83 is definite), are rejected under 35 U.S.C. 102(b) as being anticipated by German Patent 2,214,702 (figures 2-3). Note the turbomolecular pump having rotor 3, stator 2/7 surrounding the rotor, casing portion 1 that houses the stator and rotor therein, the unnumbered vane pumping section comprised by the stator and rotor, with a clearance to the left of 7 formed between the stator 2/7 and casing portion 1, so that when abnormal torque is applied from the rotor 3 to the stator, at least a part of the stator is allowed to move radially into the clearance, by compressing unnumbered resilient sealing members. Note the impact absorbing member in the form of the resilient sealing members provided between the stator and the casing portion. The sealing portion is provided between a portion of the stator that is caused to rotate with a rotating blade element by the abnormal torque and a portion of the casing 1 that is not rotated by the abnormal torque. The clearance is provided between the stator 2/7 and the casing portion 1 so that when the abnormal torque is applied from the rotor to the stator, at least a part of the stator is allowed to rotate.

Claims 38, 42, 43, 51 (as far as claim 51 is definite), 57, and 83 (as far as claim 83 is definite), are rejected under 35 U.S.C. 102(b) as being anticipated by German Patent 3,402,549 (figure 1). Note the turbomolecular pump having rotor 3, stator 2/7 surrounding the rotor, casing portion 1 that houses the stator and rotor therein, the vane pumping section 11/12 comprised by the stator and rotor, with a clearance to the left of 7 formed between the stator 2/7 and casing

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portion 1, so that when abnormal torque is applied from the rotor 3 to the stator, at least a part of the stator is allowed to move radially into the clearance, by compressing unnumbered resilient sealing members. Note the impact absorbing member in the form of the resilient sealing members provided between the stator and the casing portion. The sealing portion is provided between a portion of the stator that is caused to rotate with a rotating blade element 12 by the abnormal torque and a portion of the casing 1 that is not rotated by the abnormal torque.

Claims 38, 42, 43, 51 (as far as claim 51 is definite), 58, 59, 63-64, 72 (as far as claim 72 is definite) 79, and 83 (as far as claim 83 is definite), are rejected under 35 U.S.C. 102(b) as being anticipated by Deters 4,797,062 (figure 1). Note the turbomolecular pump having rotor 7, stator 9/14 surrounding the rotor, casing portion 1/11 that houses the stator and rotor therein, the vane pumping section 8/9 comprised by the stator and rotor, and the groove pumping section 6/14 with a clearance 17 formed between the stator 14 and casing portion 1, so that when abnormal torque is applied from the rotor 3 to the stator, at least a part of the stator is allowed to move radially into the clearance, by compressing resilient sealing members 15, 16. Note the impact absorbing member in the form of the resilient sealing members 15, 16 provided between the stator and the casing portion. The sealing portion is provided between a portion of the stator that is caused to rotate with a rotating blade element by the abnormal torque and a portion of the casing 1 that is not rotated by the abnormal torque. The clearance is provided between the stator 14 and the casing portion 1 so that when the abnormal torque is applied from the rotor to the stator, at least a part of the stator is allowed to rotate.

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Claim 59 is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 59-153,988 (figure 2). Note the turbomolecular pump 30 having rotor 32, stator 25/31 surrounding the rotor, casing portion 11c that houses the stator and rotor therein, the vane pumping section comprised by the stator and rotor, with an unnumbered clearance to the left of 25 formed between the stator 25/31 and casing portion 11c, so that when abnormal torque is applied from the rotor 32 to the stator, at least a part of the stator 25/31 is allowed to rotate.

Claims 59-69, 73-74, and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 6-40954 (figure 1). Note the turbomolecular pump having rotor 4, stator 3b surrounding the rotor, casing portion 2 that houses the stator and rotor therein, the vane pumping section near 2a, 2b, the groove pumping section 3a, 3b comprised by the stator and the rotor, with an unnumbered fitting clearance near 5 formed between the stator 3b and casing portion 2, so that when abnormal torque is applied from the rotor 4 to the stator 3b, at least a part of the stator 3b is allowed to rotate. Note the slide facilitating member 1a for facilitating the stator to slide in a circumferential direction relative to the casing portion. The slide facilitating member is a low friction member provided between the stator and the casing portion, and is a support structure for rotatably supporting the stator. Note that the slide facilitating member may also be considered as an impact absorbing member 1a between the stator and the casing portion. The impact absorbing member comprises an inner casing 3 surrounding the groove pumping section 3a, 3b comprised by the stator and the rotor. The impact absorbing member is located between the inner casing 3 and the stator 3b or casing portion 2. Note the inner casing 3 surrounds the stator, with a small fitting clearance between the inner casing and the casing portion. The inner

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casing 3 is fixed by fitting a part of an inner surface or an outer surface of the inner casing to a cylindrical portion of the stator 3b or to the casing portion 2.

Claim 80 is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 63-223,394 (figure 1). Note the turbomolecular pump having casing portion 2 housing stator 9 and rotor 1 therein, the vane pumping section near 15 comprised by the stator and the rotor, and inner casing 28 surrounding the vane pumping section, and the temperature adjusting mechanism in the form of a water jacket provided on the inner casing.

Claim 80 is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 3-124,998 (figure 1). Note the turbomolecular pump having casing portion 3 housing stator 5 and rotor 4 therein, the vane pumping section near 7 comprised by the stator and the rotor, and inner casing 7 surrounding the vane pumping section, and the temperature adjusting mechanism 9/cooling gas inlet 10 provided on the inner casing.

Claim 80 is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 62-29,796 (figure 1). Note the turbomolecular pump having casing portion 1a housing stator 8b and rotor 8a therein, the vane pumping section near 14 comprised by the stator and the rotor, and inner casing 14 surrounding the vane pumping section, and the temperature adjusting mechanism 12/13 provided on the inner casing.

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Claims 85-87 are rejected under 35 U.S.C. 102(e) as being anticipated by Okamura 5,924,841 (figure 2). Note that the effective filing date of the subject matter of claims 85-87 is July 14, 1999. Note the turbomolecular pump having casing portion 1 housing stator 4/19 and rotor 6 therein, the vane pumping section near 4 comprised by the stator and the rotor, the groove pumping section near 9 comprised by the stator 19 and rotor 6 and the heating source 16 provided at a lower portion/lower end of the stator of the groove pumping section. Because the heating source is located in the vacuum pump, it is in a vacuum condition.

Claims 85-87 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 2557551 (figure 1). Note the turbomolecular pump having casing portion 1 housing stator 6/16 and rotor 4 therein, the vane pumping section near 5/6 comprised by the stator and the rotor, the groove pumping section near 15/16 comprised by the stator 16 and rotor 15 and the heating source 18 provided at a lower portion/lower end of the stator of the groove pumping section. Because the heating source is located in the vacuum pump, it is in a vacuum condition.

Claims 85-87 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 9-72,293 (figure 2). Note the turbomolecular pump having casing portion 1 housing stator 4/19 and rotor 6 therein, the vane pumping section near 4 comprised by the stator and the rotor, the groove pumping section near 9 comprised by the stator 19 and rotor 6 and the heating source 16 provided at a lower portion/lower end of the stator of the groove pumping section. Because the heating source is located in the vacuum pump, it is in a vacuum condition.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over either (German Patent 2,214,702 or German Patent 3,402,549) in view of Schutz 5,577,883. German Patent 2,214,702 and German Patent 3,402,549 disclose turbomolecular pumps substantially as claimed as set forth above including respective stators 7, 2, but do not disclose a temperature adjusting mechanism for directly or indirectly heating or cooling the stator.

Schutz 5,577,883 (figure 2) shows a turbomolecular pump having a cooling pipe 41 located adjacent a stator 4 at the inlet of the pump, for the purpose of cooling the pump.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the turbomolecular pump of either German Patent 2,214,702 or German Patent 3,402,549 with a cooling pipe adjacent the stator at the inlet to the pump, as taught by Schutz, for the purpose of cooling the pump.

Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent 2,214,702 in view of Schutz 5,577,883. German Patent 2,214,702 discloses a turbomolecular pump substantially as claimed as set forth above including a stator 7, but does not disclose a temperature adjusting mechanism for directly or indirectly heating or cooling the stator.

Schutz 5,577,883 (figure 2) shows a turbomolecular pump having a cooling pipe 41 located adjacent a stator 4 at the inlet of the pump, for the purpose of cooling the pump.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the turbomolecular pump of German Patent 2,214,702 with a cooling pipe adjacent the stator at the inlet to the pump, as taught by Schutz, for the purpose of cooling the pump.

Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 6-40954 in view of Schutz 5,577,883. Japanese Patent 6-40954 discloses a turbomolecular pump substantially as claimed as set forth above including a stator 2a/2b, but does not disclose that the casing portion is comprised of a high thermal conductivity material

Schutz 5,577,883 (figure 2) shows a turbomolecular pump having a casing 2 made of aluminum, which is known to be a high thermal conductivity material, for the purpose of providing good conduction of heat.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of Japanese Patent 6-40954 such that the casing portion is comprised of aluminum, as taught by Schutz, for the purpose of providing good heat conduction.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed.

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Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 38 and 49 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7 and 7, respectively, of U.S. Patent No. 6,332,752 in view of Schutz 5,577,883. Claim 7 of U.S. Patent No. 6,332,752 claims substantially the same subject matter as claims 38 and 49 of the instant application, including a turbomolecular pump with a rotor, a stator, a casing portion housing the stator and rotor, a vane pumping section and/or a groove pumping section comprised by the rotor and the stator, and a clearance in the form of a space radially outside of a stator vane spacer such that the stator vane spacer (which is part of the stator) withdraws therein upon the application of abnormal torque from the rotor to the stator, but does not claim that the stator surrounds the rotor, and does not claim a temperature adjusting mechanism for directly or indirectly heating or cooling the stator.

Schutz '883 (figure 2) shows a turbomolecular pump having a stator 4 that surrounds a rotor 6, for the purpose of directing working fluid to the rotor. The turbomolecular pump has a cooling pipe 41 located adjacent a stator 4 at the inlet of the pump, for the purpose of cooling the pump.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of claim 7 of U.S. Patent No. 6,332,752 such that the stator surrounds the rotor, as taught by Schutz for the purpose of directing working fluid to the rotor, and to provide the turbomolecular pump of claim 7 of U.S. Patent No. 6,332,752 with a cooling pipe adjacent the stator at the inlet to the pump, as taught by Schutz, for the purpose of cooling the pump. Concerning the additional limitations in claim 7 of U.S. Patent No. 6,332,752, such as the constriction releasing structure, and the vane pumping section comprising plural stator vanes and layered stator vane spacers, it would have been obvious to a person having ordinary skill in the art to eliminate these elements from U.S. Patent No. 6,332,752, for the purpose of reducing cost and simplifying assembly.

Claims 59, 60, 61, 62, and 70 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10, 10, 13, 11, and 10, respectively, of U.S. Patent No. 6,332,752, in view of Schutz 5,577,883. Claims 10, 11, and 13 of U.S. Patent No. 6,332,752 claim substantially the same subject matter as claims 59-62 and 70 of the instant application, including a turbomolecular pump with a rotor, a stator, a casing portion housing the stator and rotor, a vane pumping section and/or a groove pumping section comprised by the rotor and the stator, and a clearance in the form of space between the stator and the pump casing for allowing the relative sliding movement (which is circumferential) of the stator, a slide facilitating member in the form of a bearing, a friction reducing member with a low friction coefficient, and a bearing in the form of a support structure that rotatably supports the stator, but

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does not claim that the stator surrounds the rotor, and does not claim a temperature adjusting mechanism for directly or indirectly heating or cooling the stator.

Schutz '883 (figure 2) shows a turbomolecular pump having a stator 4 that surrounds a rotor 6, for the purpose of directing working fluid to the rotor. The turbomolecular pump has a cooling pipe 41 located adjacent a stator 4 at the inlet of the pump, for the purpose of cooling the pump.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of claims 10-11 and 13 of U.S. Patent No. 6,332,752 such that the stator surrounds the rotor, as taught by Schutz for the purpose of directing working fluid to the rotor, and to provide the turbomolecular pump of claims 10-11 and 13 of U.S. Patent No. 6,332,752 with a cooling pipe adjacent the stator at the inlet to the pump, as taught by Schutz, for the purpose of cooling the pump. Concerning the additional limitation in 10 of U.S. Patent No. 6,332,752 of the fixation section, it would have been obvious to a person having ordinary skill in the art to eliminate the fixation section from U.S. Patent No. 6,332,752, for the purpose of reducing cost and simplifying assembly.

Claims 59-69, 73-74, and 76 are all rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 34 of U.S. Patent No. 6,332,752, in view of Japanese Patent 6-40954. Claim 34 of U.S. Patent No. 6,332,752 claims substantially the same subject matter as claims 59-69, 73-74, and 76 of the instant application,

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including a turbomolecular pump with a rotor, a stator, a casing portion housing the stator and rotor, a vane pumping section and/or a groove pumping section comprised by the rotor and the stator, and a clearance in the form of space between the stator and the pump casing for allowing the relative sliding movement (which is circumferential) of the stator, a friction reducing member provided in part of the space between the stator and the pump casing in the form of a slide facilitating member which is a low friction member located between the stator and the casing portion, and an impact absorbing member located inside of the friction reducing member and between the stator and the casing portion, but does not claim that the stator surrounds the rotor, with the slide facilitating member being a support structure for rotatably supporting the stator, with the impact absorbing member comprising an inner casing that surrounds the vane pumping section and/or the groove pumping section, with the friction reducing member being provided between the inner casing and the stator or the casing, with the clearance being provided between the inner casing and the casing, with the inner casing being fixed by fitting a part of an inner surface or an outer surface of the inner casing to a cylindrical portion of the stator to the casing, with the vane pumping section and/or the groove pumping section being attached to the casing by a friction reducing mechanism.

Japanese Patent 6-40954 (figure 1) shows a turbomolecular pump having a stator 3b that surrounds a rotor 4, for the purpose of directing working fluid from the stator to the rotor, with a slide facilitating member 1a being a support structure for rotatably supporting the stator, with an impact absorbing member 1a comprising an inner casing 3 and a supporting tube 1a that surrounds a groove pumping section 3a/3b, with friction reducing member 1a being provided

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between the inner casing 3 and the stator 3b, with the inner casing 3 surrounding the stator, with a small fitting clearance between the inner casing and the casing portion. The inner casing 3 is fixed by fitting a part of an inner surface or an outer surface of the inner casing to a cylindrical portion of the stator 3b or to the casing portion 2. The groove pumping section 3a/3b is attached to the casing by the friction reducing mechanism, for the purpose of permitting circumferential sliding of the stator upon an abnormal torque being applied to the stator by the rotor.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of claim 34 of U.S. Patent 6,332,752 such that the stator surrounds the rotor, with the slide facilitating member being a support structure for rotatably supporting the stator, with the impact absorbing member comprising an inner casing that surrounds the groove pumping section, with the friction reducing member being provided between the inner casing and the stator, with the clearance being provided between the inner casing and the casing, with the inner casing being fixed by fitting a part of an inner surface or an outer surface of the inner casing to a cylindrical portion of the stator to the casing, with the groove pumping section being attached to the casing by a friction reducing mechanism, as taught by Japanese Patent 6-40954. Concerning the additional limitation in 34 of U.S. Patent No. 6,332,752 of the fixation section, it would have been obvious to a person having ordinary skill in the art to eliminate the fixation section from U.S. Patent No. 6,332,752, for the purpose of reducing cost and simplifying assembly.

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Claim 75 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 34 of U.S. Patent No. 6,332,752 and Japanese Patent 6-40954 as applied to claim 73 above, and further in view of Schutz 5,577,883. The modified turbomolecular pump of claim 34 of U.S. Patent No. 6,332,752 shows all of the claimed subject matter except for the casing portion being comprised of a high thermal conductivity material.

Schutz 5,577,883 (figure 2) shows a turbomolecular pump having a casing 2 made of aluminum, which is known to be a high thermal conductivity material, for the purpose of providing good conduction of heat.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of modified claim 34 of U.S. Patent 6,332,752 such that the casing portion is comprised of aluminum, as taught by Schutz, for the purpose of providing good heat conduction.

Allowable Subject Matter

Claims 88, 90-92, and 94-99 are allowed.

Claims 81-82 contain allowable subject matter, Applicants should correct the informalities therein.

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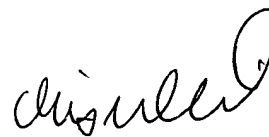
Claims 39-41, 47-48, 50, 52-56, 71, and 77 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 44-46 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.



Christopher Verdier
Primary Examiner
Art Unit 3745

C.V.
December 20, 2002